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IS 10859 (1993): Earth-moving machinery - Dumper bodies - Volumetric ratings [MED 7: Material Handling Systems and Equipment]

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मिट्टी उठाने की मशीनरी – डंपर ढाँचे – आयतनी निर्धारण

(पहला पुनरीक्षण)

Indian Standard

EARTH-MOVING MACHINERY — DUMPER BODIES — VOLUMETRIC RATINGS

(First Revision)

UDC 621·869 : 626·11

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1993 **Price Group 3**

Bulk Handling Systems and Equipment Sectional Committee, HMD 7

NATIONAL FOREWORD

This Indian Standard which is identical with ISO 6483 : 1980 'Earth-moving machinery — Dumper bodies — Volumetric rating', issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Bulk Handling Systems and Equipment Sectional Committee (HMD 7) and approval of the Heavy Mechanical Engineering Division Council.

This standard was first published in 1984. ISO 6483 : 1980 has been adopted during this revision.

The text of ISO standard has been approved for publication as Indian Standard without deviations. Certain terminology and conventions are however not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as a decimal marker.

ISO 7132 'Earth-moving machinery — Dumpers — Terminology' has been referred in this standard. This International Standard has since been published as ISO 7132 : 1990 'Earth-moving machinery — Dumpers — Terminology and commercial specifications'. The concerned technical committee has reviewed the provisions of ISO 7132 referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard.

In reporting the results of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'.

Indian Standard

EARTH-MOVING MACHINERY — DUMPER BODIES — VOLUMETRIC RATINGS

(First Revision)

1 Scope and field of application

This International Standard specifies a procedure for approximating the volume of typical materials carried in dumper bodies. The volumes are based on the inside dimensions of the bodies and representative volumes on top of the bodies. This rating method is intended to be a consistent means of comparing body capacities; it is not intended to define actual capacities that might be observed in any specific application.

2 Reference

ISO 7132, *Earth-moving machinery — Dumpers — Terminology.*[1]

3 Definitions

3.1 body : That portion of a dumper in which material is carried. See figures 1 and 2. Surfaces whose function is to protect against personal injury or machine damage are not to be considered as carrying surfaces for this analysis.

3.2 bottom dumper : Dumper which discharges material by opening its bottom.

3.3 rear dumper : Dumper which discharges material in a rearward direction parallel to its longitudinal axis.

3.4 side dumper : Dumper which discharges material in a direction perpendicular to its longitudinal axis.

4 Volumetric ratings

4.1 The body shall be positioned as it would be if it were fully lowered on a machine on a horizontal surface with all tyres at their recommended pressure.

4.2 Any load retaining or ejecting device shall be positioned to give maximum volumetric capacity. This position must be within the device's normal operating range.

4.3 Boundaries of the struck volume

4.3.1 The interior surfaces of the body - bottom, sides, ejection or retention device.

4.3.2 For bodies that have an open end over which material moves when discharged, the volume shall be limited by a plane passing through the rear-most edge of the open end and top rear corners of the side plates or at a slope of 1 : 1 extending upward and inward from the rear-most edge of the open end; whichever is smaller. The planes are defined in 4.3.2.1 and 4.3.2.2. Volume computations for open sides can be made in the same manner.

4.3.2.1 The plane, or planes, defined by the intermediate edges. See figure 3.

4.3.2.2 A plane of 1 : 1 slope from the discharge edge. See figure 3.

4.3.3 The plane defined by the mean lines. Mean lines are horizontal lines, above which, in a side view of the body, there is an area of the body side equal to the non-bowl side area under the lines. See figure 4.

4.3.4 Vertical planes from the interior surfaces of the body sides to the plane of the mean lines. See figure 4.

4.4 Boundaries of the top (heaped) volume.

4.4.1 Non-horizontal surfaces, above the upper plane of the struck volume which can retain load.

4.4.2 Plane(s) of 2 : 1 (26,6°) slope, in and up from the upper edges of the surfaces of 4.4.1 and 4.3.4. Planes of 2 : 1 (26,6°) slope, in and up, from the edges of upper plane of the struck volume. See figure 5. It does not mean that all materials will form this angle, but this angle generally expresses best the angle of repose of the usual soils/rocks.

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[1] At present at the stage of draft.

5 Expression of ratings

5.1 Rated capacity of the dumper or trailer body shall be the sum of the struck volume and the top volume. Any published ratings must be within ± 3 % of the volume determined by this procedure.

5.2 Ratings for volumes less than 10 m^3 should be expressed to the nearest 0,1 m^3 while those volumes larger should be expressed to the nearest 0,5 m^3.

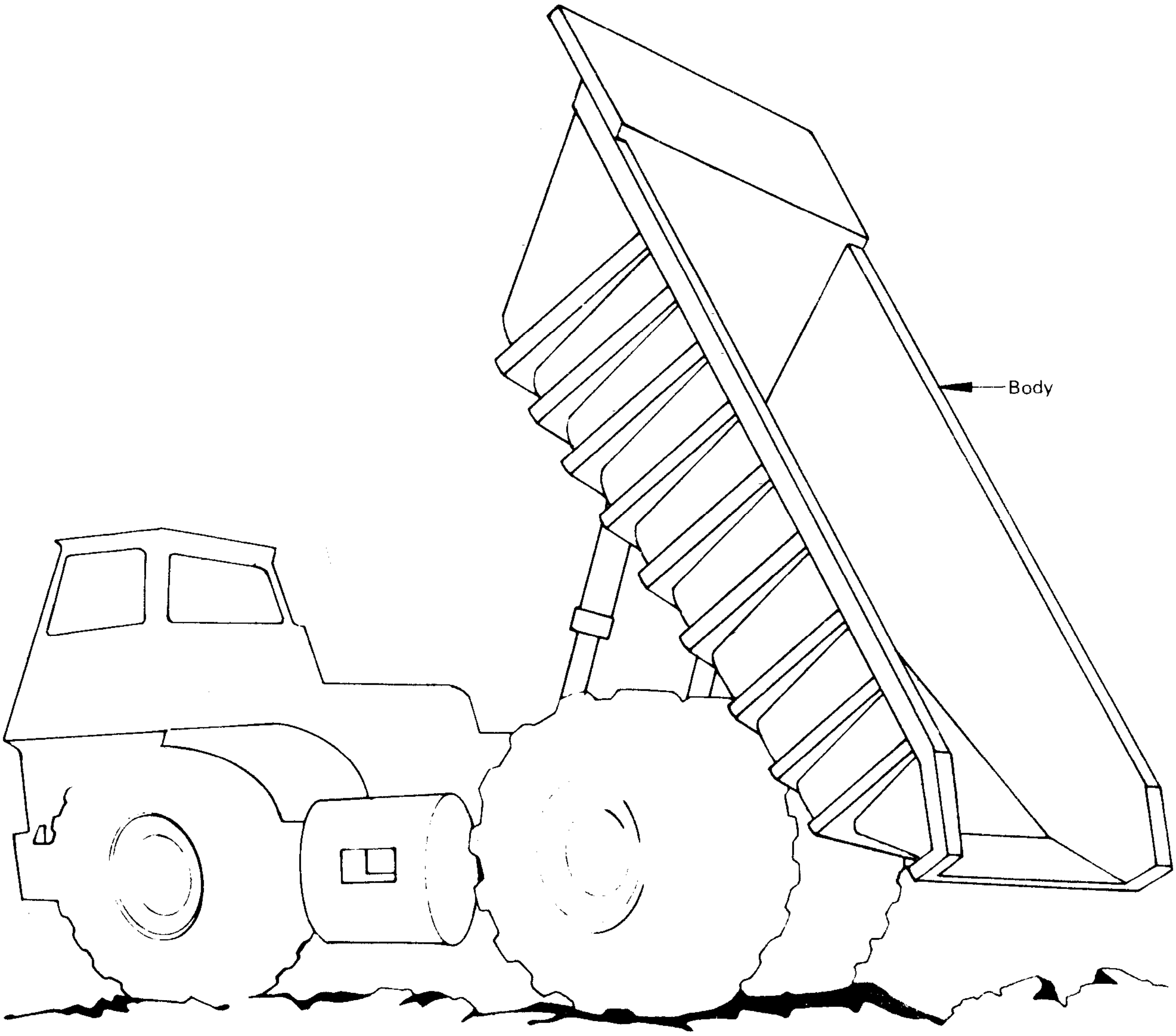
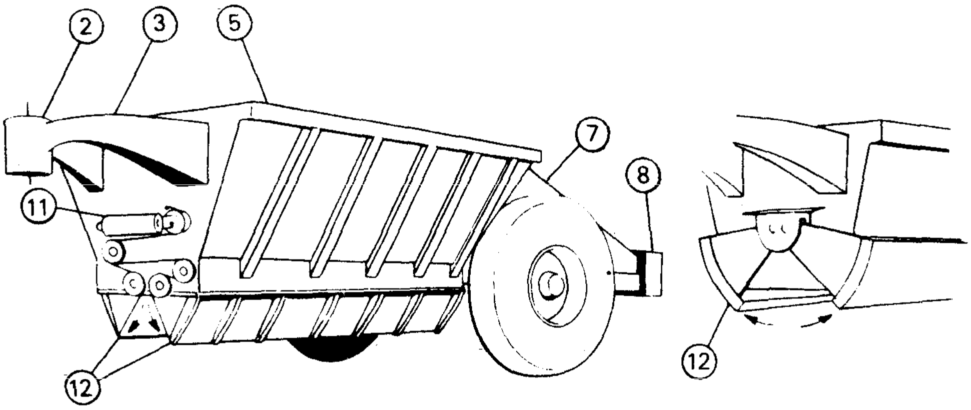
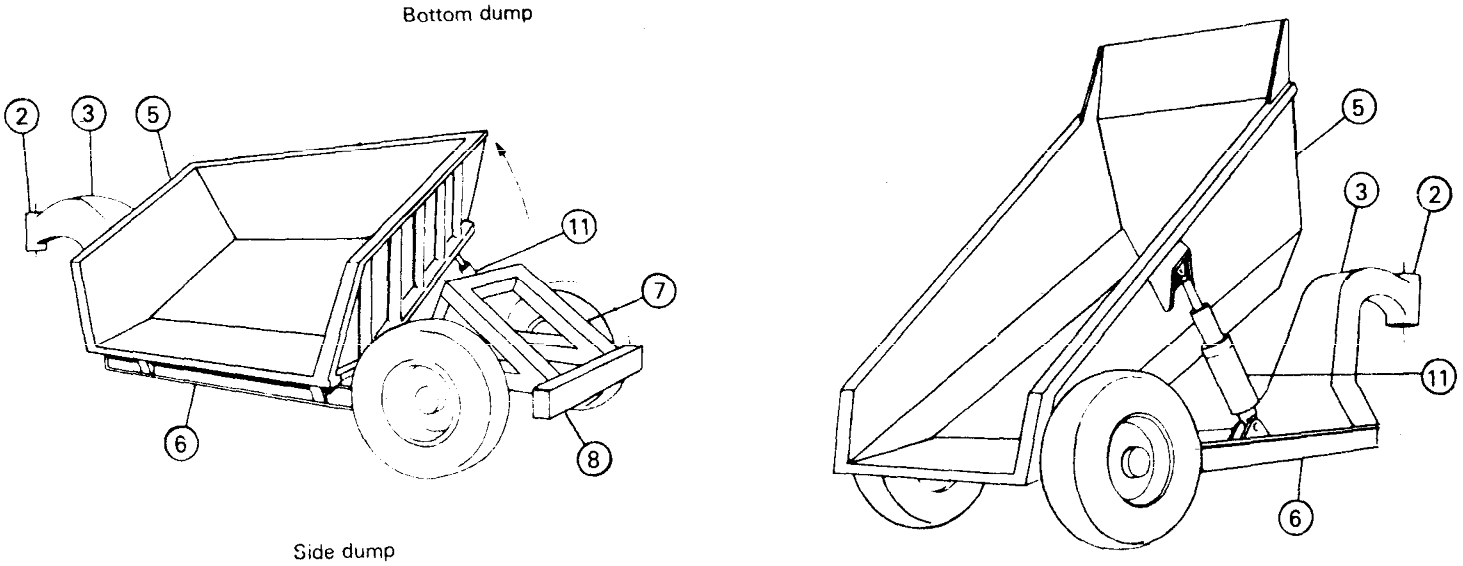


Figure 1 — Dumper body

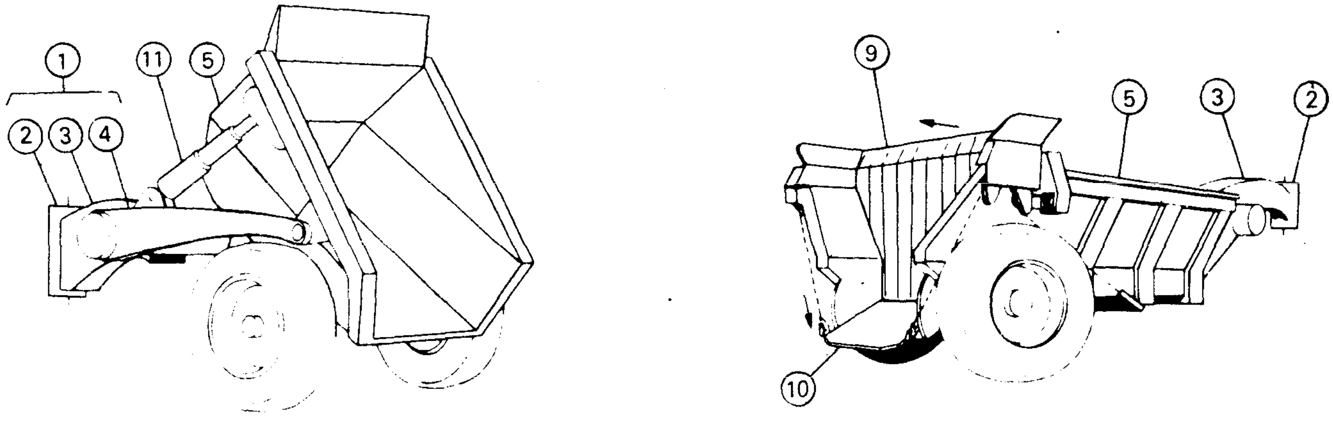


Bottom dump



Side dump

Rear dump



Rear dump

Rear dump

1 Frame, draft
2 Housing, king pin
3 Gooseneck
4 Arms, draft
5 Body
6 Frame, main
7 Frame, rear
8 Bumper
9 Ejector
10 Tailgate
11 Cylinder
12 Doors

Figure 2 – Types of dumper body

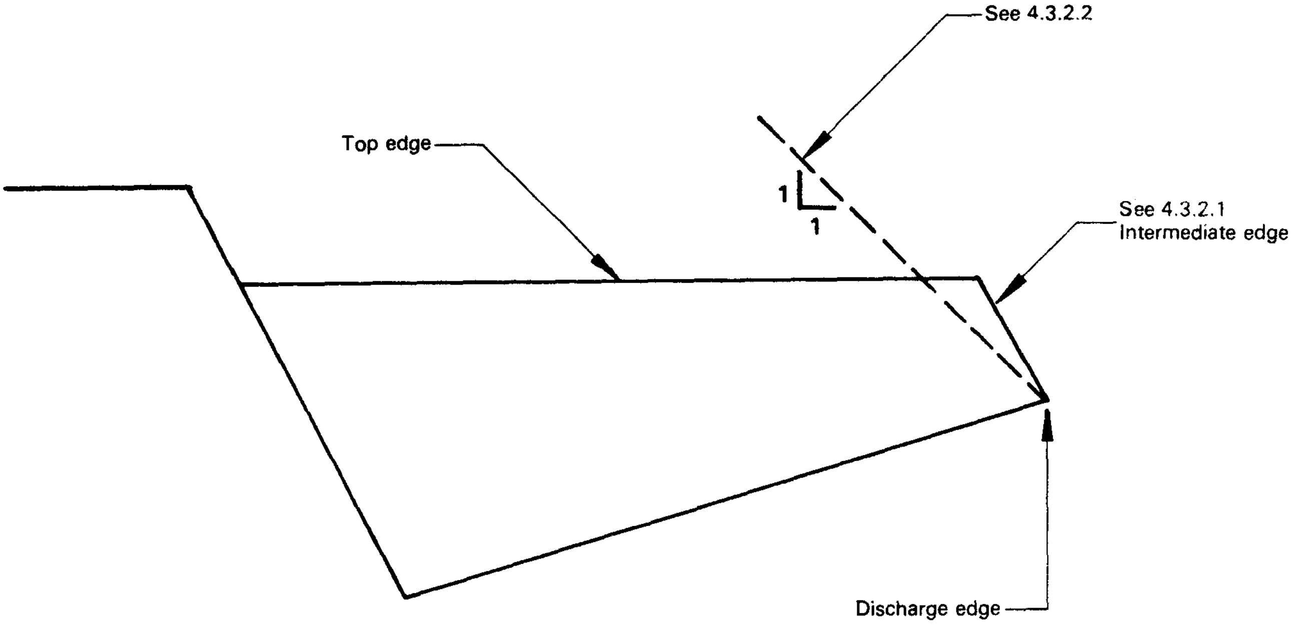


Figure 3 — Boundaries of the struck volume; planes defined by the intermediate or discharge edges

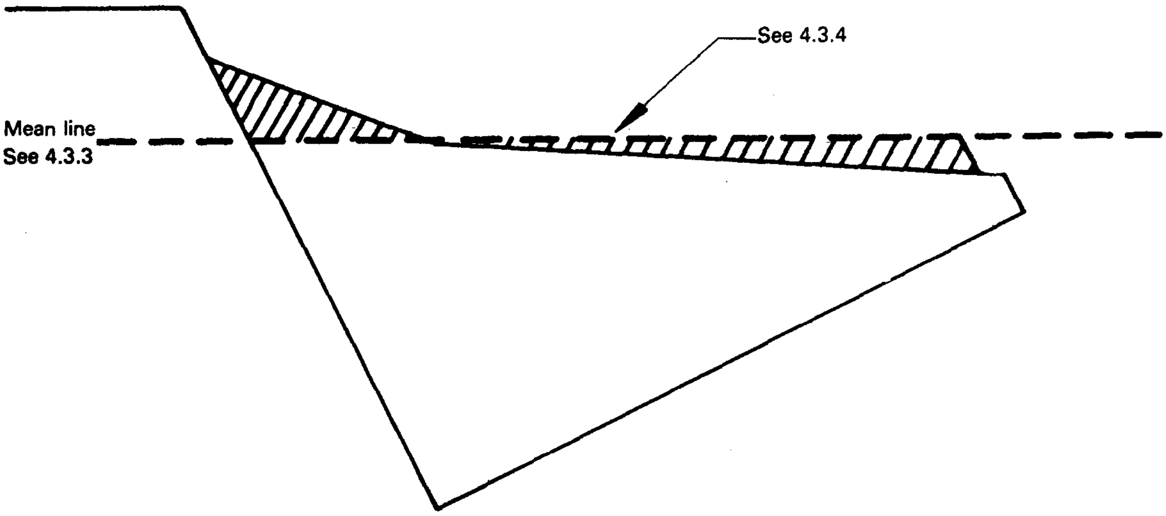
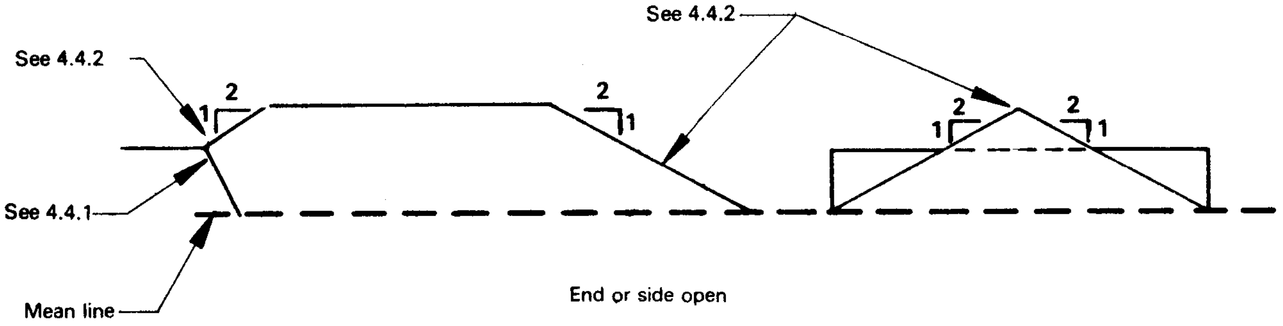
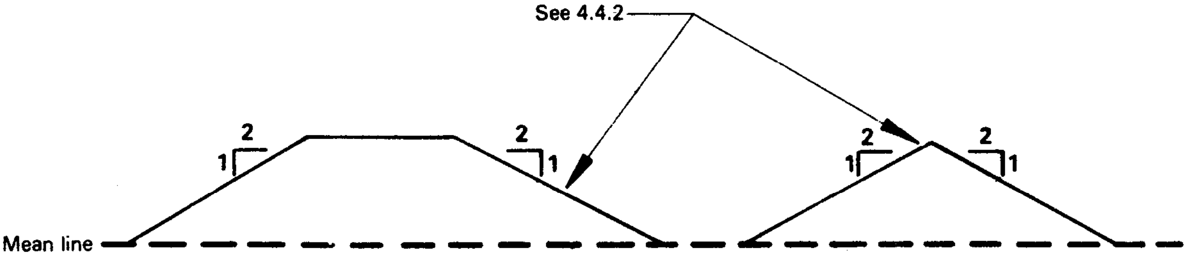


Figure 4 — Boundaries of the struck volume; plane defined by mean line



End or side open



Closed body

Figure 5 — Boundaries of the top (heaped) volume

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